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DEPARTMENT OF ENERGY
FEDERAL ENERGY REGULATORY COMMISSION

Increasing Market and Planning Efficiency through   Docket No. AD10-12-004
Improved Software

NOTICE OF TECHNICAL CONFERENCE:
INCREASING REAL-TIME AND DAY-AHEAD MARKET EFFICIENCY
THROUGH IMPROVED SOFTWARE

Take notice that Commission staff will convene a technical conference on June 24, 25, and 26, 2013 to discuss opportunities for increasing real-time and day-ahead market efficiency through improved software. A detailed agenda with the list of and times for the selected speakers will be published on the Commission's website[1] after May 13, 2013.

This conference will bring together experts from diverse backgrounds and experiences including electric system operators, software developers, government, research centers and academia for the purposes of stimulating discussion, sharing information, and identifying fruitful avenues for research concerning the technical aspects of improved software for increasing efficiency. This conference is intended to build on the discussions initiated in the previous Commission staff technical conferences on increasing market and planning efficiency through improved software. As such, staff will be facilitating a discussion to explore research and steps needed to implement approaches to market modeling which appear to have significant promise for potential efficiency improvements in the following areas: stochastic modeling; optimal transmission switching; AC optimal power flow modeling; and use of active and dynamic transmission ratings.

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[1] http://www.ferc.gov/industries/electric/indus-act/market-planning.asp.

In particular we solicit proposals for presentations on topics and questions such as the following:

1) <u>Stochastic modeling for unit commitment and operating reserves</u>: Given the difficulty in formulating and solving full-scale stochastic unit-commitment problems, what interim steps might be taken to more intelligently incorporate information about uncertainty into unit-commitment and dispatch? Specifically:

   - How can uncertainty be described in a manageable set of scenarios or constraints that improve unit-commitment and dispatch while allowing good solutions to be achieved in the required timeframe?

   - If a stochastic unit-commitment model is used, how should day-ahead prices be calculated, given that the stochastic formulation no longer produces as part of its solution a single set of deterministic shadow prices for power at each location?

   - How would a stochastic day-ahead unit commitment mechanism alter current market software for other processes (for example, reliability unit-commitment processes)?

   - What steps toward better incorporation of uncertainty into unit-commitment might be taken over the next 5 to 10 years?

   - What methods can be used to calculate requirements for contingency reserves and regulating reserves?

      o How can reserves calculations more completely capture the uncertainty and variability of the system, including forecast error?

      o How can outage probability be captured in contingency reserve calculations, and how good is the available data?

      o What methods can be used to determine reserve zones?

2) Optimal transmission switching:

   - Simple optimal DC transmission switching appears to represent a potentially solvable technical problem using existing computational resources if transmission operators optimize only a small number of transmission switch positions. It is less clear whether transmission switching model formulations that include realistic representations of reliability requirements are solvable. What is the performance of these more complex model formulations?

- What additional computational impediments, if any, exist to implementing optimal transmission switching over a small number of switches while maintaining reliability?

- Optimal AC transmission switching presents additional technical problems. What is the performance of these formulations?

- What steps toward optimal transmission switching might be taken over the next 5 to 10 years?

3) AC optimal power flow modeling:

- What is the current state of computational capability with respect to dependably solving AC optimal power flow problems, including analysis of power system reliability?

- Discussions during previous conferences have centered on concerns that current system data quality might not allow for an AC optimal power flow model to be properly formulated and solved. What are the specific data concerns, and what needs to be done to address them? What accuracy of solutions is good enough for convergence parameters?

- What steps toward use of AC optimal power flow modeling might be taken over the next 5 to 10 years?

4) Transmission limit modeling:

- Previous presentations examined the use of post-contingency analysis when determining transmission ratings, including consideration of availability of ramping capability. How can (or have) adaptive transmission ratings been implemented?

- Previous presentations also examined how transmission ratings might be updated in real time in response to ambient conditions. How have such dynamic transmission ratings been implemented?

- What are the data or computational challenges associated with implementing adaptive or dynamic transmission ratings?

- How can inter-temporal considerations regarding transmission line loadings and limits be incorporated into economic dispatch algorithms?

5) Improvement in linear programs, nonlinear programs and MIPs for faster and/or better solutions.

6) New more efficient approaches to loop flow and joint dispatch. How much inefficiency exists in the current process?

Discussion of these topics should highlight any advances made since last year's conference and provide context for any proposals or presentations on best practices, other analyses of current operations with respect to these and related topics, and provide opportunity to discuss existing practices that need improvement.

The technical conference will be held in conference rooms 3M-2, 3M-3, and 3M-4 at the Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426. All interested participants are invited to attend, and participants with ideas for relevant presentations are invited to nominate themselves to speak at the conference.

Speaker nominations must be submitted on or before April 26, 2013 through the Commission's website[2] by providing the proposed speaker's contact information along with a title, abstract, and list of contributing authors for the proposed presentation. Proposed presentations should be closely related to the topics discussed above. Speakers and presentations will be selected to ensure relevant topics and to accommodate time constraints.

Although registration is not required for general attendance by United States citizens, we encourage those planning to attend the conference to register through the Commission's website.[3] We will provide nametags for those who register on or before June 20, 2013.

Due to new security procedures, we strongly encourage attendees who are not citizens of the United States to register for the conference by June 1, 2013, in order to avoid any delay associated with being processed by FERC security.

The Commission will accept comments following the conference, with a deadline of July 31, 2013.

There is an "eSubscription" link on the web site that enables subscribers to receive email notification when a document is added to a subscribed docket(s). For assistance

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[2] The speaker nomination form is located at https://www.ferc.gov/whats-new/registration/real-market-6-24-13-speaker-form.asp.

[3] The registration form is located at https://www.ferc.gov/whats-new/registration/real-market-6-24-13-form.asp.

with any FERC Online service, please email FERCOnlineSupport@ferc.gov, or call 866 208-3676 (toll free). For TTY, call 202 502-8659.

Teleconferencing and WebEx will be available. Off-site participants interested in attending via teleconference or viewing the presentations through WebEx must register at https://www.ferc.gov/whats-new/registration/real-market-6-24-13-form.asp, and do so by close of business on June 17, 2013. WebEx and teleconferencing may not be available to those who do not register.

FERC conferences are accessible under section 508 of the Rehabilitation Act of 1973. For accessibility accommodations please send an email to accessibility@ferc.gov or call toll free (866) 208-3372 (voice) or (202) 502-8659 (TTY), or send a fax to (202) 208-2106 with the required accommodations.

For further information about these conferences, please contact:

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Nathaniel J. Davis, Sr.,
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